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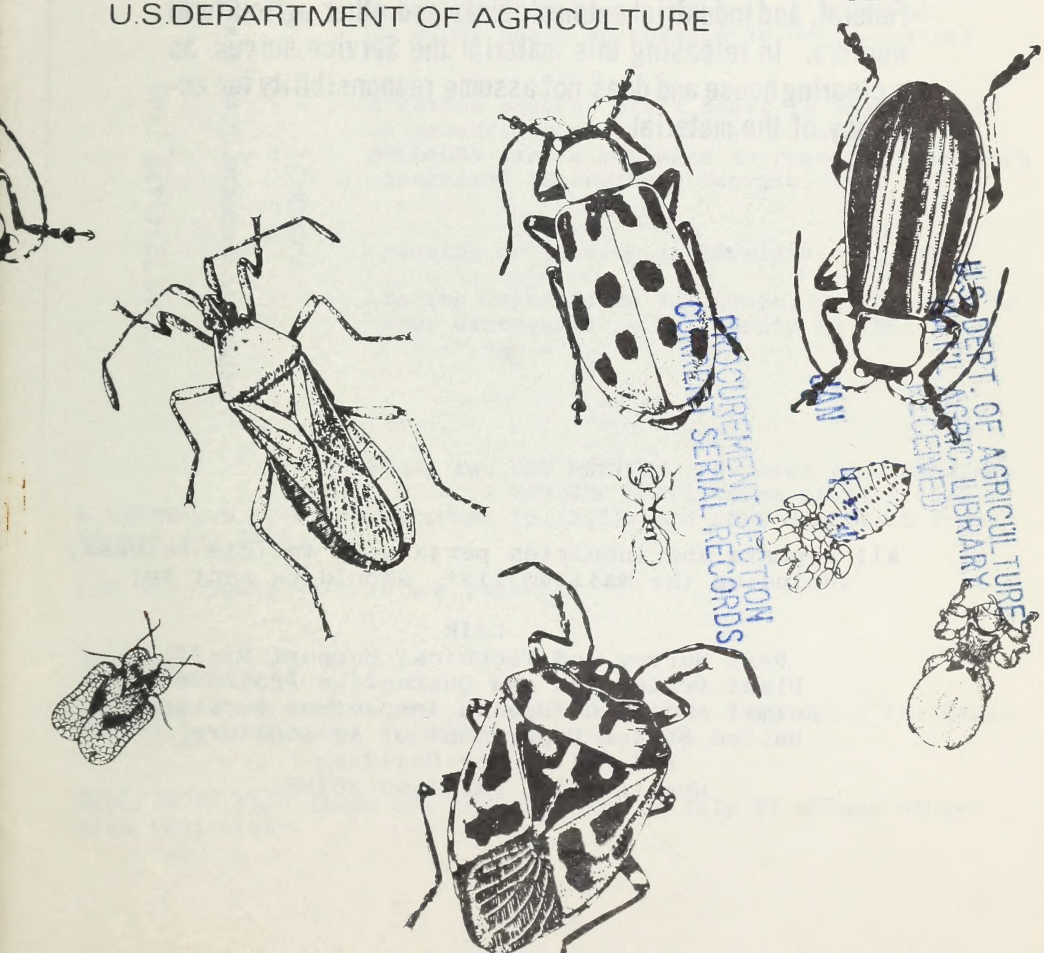

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The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Service serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 23 August 3, 1973 Number 31

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

CORN EARWORM treatment underway in sweet corn on Eastern Shore of Maryland; infestations in corn increased over 1972 in Northern Neck area of Virginia. GREENBUG increased on sorghum in southeast Colorado, southwest Kansas, panhandle area of Oklahoma, and in several areas of Texas. (pp. 503-505). TOBACCO BUDWORM continued heavy on tobacco in southern Maryland. (p. 506).

DUSKY SAP BEETLE at economic levels on sweet corn in Maryland. (p. 507).

EUROPEAN CORN BORER second generation in Minnesota at least 7 days earlier than last year, may be heavier than first generation. Weather conditions favorable for first-generation development in Wisconsin, second generation may be serious threat to sweet corn; egg laying on sweet corn heavy on Eastern Shore of Maryland. (pp. 507-508). SORGHUM MIDGE heavy on sorghum in south-central Texas. (p. 509).

BOLL WEEVIL punctured cotton squares still heavy in southern and central Alabama, first-generation weevil emergence underway in southern Tennessee. BOLLWORM larvae and eggs increased in southern and central Alabama, increased in southern Georgia. (pp. 511-512).

GREEN PEACH APHID increasing on tobacco in Maryland. (p. 512).

JAPANESE BEETLE infestation reported in San Diego, California, is first in State since pest discovered in Sacramento in 1961. (p. 518).

Detection

New State records include two MAY BEETLES, one each from Maryland and West Virginia (p. 513); a CONIFER SAWFLY from Utah (p. 515); a GEOMETRID MOTH from Alabama (p. 514); and LONE STAR TICK from Kansas (p. 517).

For new county records see page 513.

Special Reports

Distinguishing Characters of the Walnut Husk Maggots of the Genus *Rhagoletis* (Diptera, Tephritidae). (p. 522).

Reports in this issue are for week ending July 27 unless otherwise indicated.

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NATIONAL WEATHER SERVICE'S 30-DAY OUTLOOK

AUGUST 1973

The National Weather Services 30-day outlook for August is for temperatures to average below seasonal normals from the Continental Divide to the Appalachian Mountains. Above normal temperatures are indicated west of the Divide as well as in New England and along the east gulf coast. Elsewhere near normal temperatures are in prospect. Rainfall is expected to exceed normal over the Atlantic Coast States, the southern Great Plains, the southern Plateau, and much of the Great Lakes region. Subnormal totals are indicated for the northwest quarter of the Nation. In unspecified areas near normal amounts are in prospect.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the National Weather Service. You can subscribe through the Superintendent of Documents, Washington, D.C. 20250. Price $5.00 a year.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMYWORM (Pseudaletia unipuncta) - NORTH DAKOTA - Up to 10 per square foot in barley in Walhalla area, Pembina County. Also reported in Hoople and St. Thomas area of county. Some controls applied. (Kaatz). MINNESOTA - Surveys indicate no significant concentrations of this pest. Larvae averaged 2 per one row foot in field on unripe barley in Polk County. (Minn. Pest Rpt.). IOWA - Damage decreased across State. One 10-acre cornfield in Dallas County severely damaged. Field in Hancock County treated after larvae moved from oats and grassy alfalfa. Moths still collected at light traps across State. (Iowa Ins. Sur.). WISCONSIN - Infested 80 percent of corn plants in occasional fields in northwest district, but in most cases growing point of plant not injured and plants expected to develop with only minor loss. Larvae near pupation in most fields checked; damage should decrease sharply next few days. Serious in scattered cornfields in Chippewa, Sheboygan, Jackson, Marinette, and Wood Counties. About 1,000 acres of corn sprayed near Bloomer, Chippewa County. (Wis. Ins. Sur.).

MARYLAND - P. unipuncta larvae heavy in 60 acres of sweet corn in Kent County; larvae within ears. Damage in 2 fields averaged 2 and 17 percent. (U. Md., Ent. Dept.). MAINE - First adult of season taken in light trap during week of July 18 near Skowhegan, Somerset County. Larva taken on corn July 26 near Chesterville, Franklin County. (Gall).

BEET LEAFHOPPER (Circulifer tenellus) - CALIFORNIA - Intensive survey through southern Salinas Valley, Monterey County, on susceptible host crops showed generally low curly-top infection. Percent infestion by crop: Beans 0-1; tomatoes 0-1; peppers 0-1; and sugar beets 0-7. No curly top found in 26 fields examined in San Benito and southern Santa Clara Counties. Portions of beet fields on one Fresno County farm showed very heavy curly-top infection, 7-100 percent, while nearby fields did not. (Cal. Coop. Rpt.). COLORADO - Counts increased to 0-35 per 100 sweeps in some beet fields. (Schweissing).

CORN EARWORM (Heliothis zea) - DELAWARE - Adults increased significantly in blacklight trap collections in several areas. (Burbutis, Davis). MARYLAND - Adult light trap catches averaged 10 per night in Worcester County (2 traps), 23 per night in Wicomico, and 5 per night in Queen Annes Counties. Other Eastern Shore counts averaged less than 2 per night. Sweet corn and field corn silks with eggs averaged 7 percent. First and second instars present in most fields east of Kent County or Eastern Shore and southern Prince Georges County; heaviest infestations ranged below 10 percent. Treatments began on Eastern Shore, 75 percent of 15,000 acres of sweet corn treated. Populations expected to increase rapidly statewide. (U. Md., Ent. Dept.). VIRGINIA - Survey of 39 cornfields in Tidewater region showed 35.8 percent of all ears of field corn (975) infested. Fields south of James River 41.3 percent infested, about 2.5 times that of 1972. In Middle Peninsula, infestation averaged 39.4 percent compared to 24.5 percent in 1972. Infestation increased from 2 percent (1972) to 18.7 percent this season in Northern Neck. Black light collections light, increase expected. (Allen).

TENNESSEE - Heliothis zea larvae infested kernel-forming ears in many cornfields in central areas; ranged 1-12 per ear. (Gordon, Bruer). GEORGIA - Heavy in several fields of peanuts in Calhoun County. (King, Womack). FLORIDA - Larvae fed on peanut blossoms, less than 5 percent of stand infested at Williston, Levy County. (Fla. Coop. Sur.). MISSISSIPPI - Infested 20 percent of ears in 75 acres of corn in Madison County. Heavy in curls of young corn for silage in Noxubee County. (Robinson).

KANSAS - H. zea larvae very light in whorls of late corn and in ears of silking corn in east-central district. Blacklight trap catches indicate significant number of moths flying in Brown County. (Bell). OKLAHOMA - Damaged 20 percent of sorghum stalks in some areas of Greer County, moderate in Kay County. Ranged 1-6 per 10 sweeps in alfalfa in Cleveland, McClain, and Garvin Counties. (Okla. Coop. Sur.). ARIZONA - Averaged one per stalk of field corn at Kansas Settlement, Cochise County. (Ariz. Coop. Sur.). WISCONSIN - First moth of season taken in blacklight trap in Rock County. (Wis. Ins. Sur.).

CORN LEAF APHID (Rhopalosiphum maidis) - MARYLAND - Heavily infested 100 acres of sorghum in lower Prince Georges County near Aquasco. Treatments needed. Sweet corn infestation levels on Eastern Shore ranged 2-11 percent, no treating required. (U. Md., Ent. Dept.). WEST VIRGINIA - Heavy on corn, several hundred per whorl in many plants in Monongalia County. (Butler). KENTUCKY - Scattered, heavy infestations present on corn. Ranged 200-300 per grain sorghum plant in Todd County. (Barnett, Raney). ILLINOIS - Continued abundant on corn in late-whorl and early tassel stages. Remained noneconomic throughout most of State. Six inches of rain past period alleviated mositure stress of corn; greatly reduced possibility of aphid damage. (Ill. Ins. Rpt.). WISCONSIN - Heavy and increased in most cornfields. Built up on silks in some fields on western side of State. (Wis. Ins. Sur.).

NORTH DAKOTA - Up to 50 R. maidis per head on barley in Walhalla area, Pembina County. Some controls applied. (Kaatz). NEBRASKA - Light in Dundy County corn and sorghum. Ranged 0-200 (average 25) per plant in 3 cornfields. Ranged 0-300 (average about 40) per plant in 3 sorghum fields. (Koinzan). KANSAS - Heavy whorl infestations in sorghum appear to be declining over State. Many fields in boot and later stages; aphids more exposed to predators and unfavorable weather. (Bell). OKLAHOMA - Heavy in scattered sorghum fields in Texas County, light in most Cimarron County fields. Ranged 200-300 per plant in Roger Mills County, heavy in Ottawa County. Light in Garvin County broomcorn. (Okla. Coop. Sur.). TEXAS - Decreased on grain sorghum in South and High Plains areas. Heaviest infestations noted in Motley County. (McIntyre et al.). ARIZONA - Heavy in field corn at Kansas Settlement, Cochise County. Plants not endangered, beneficial species active in and on aphid colonies. (Ariz. Coop. Sur.).

GREENBUG (Schizaphis graminum) - NEBRASKA - Scattered fields of sorghum in southeast and central crop districts treated. Damage light in most areas, parasites increasing rapidly in some fields. Averaged 36 colonies, 12 specimens per colony, per plant in Nemaha County; ranged 800-1,200 per plant in Lancaster County. About 70 percent of replanted sorghum, following hail, destroyed in Butler

County. One 8-inch tall field of forage sorghum destroyed in Saunders County. (Roselle). Averaged 190.6 per plant in 251 grain sorghum fields (mostly preboot to early boot stage) in Clay County. Damage light in most fields. Parasitism varied considerably from field to field. Predators increased. (Gary, Keith). S. graminum light to moderate, ranged 0-500, in Dundy County sorghum. Averaged about 250 per plant in 3 fields. No economic damage noted. (Koinzan). COLORADO - S. graminum increased on sorghum in southeast counties, ranged 0-500 per plant. Heaviest in Big Bend area of Bent and Crowley Counties. (Schweissing). KANSAS - Continued to increase in sorghum in southwest district; some fields treated. Light in most fields surveyed in northwest and west-central districts; however, heavy in 2 fields in boot stage in Rawlins County, counts 1,800 and 2,000 per plant with lower 3 leaves dead or badly damaged. Greenbug generally light in sorghum over remainder of State except for isolated cases noted in Riley and Wabaunsee Counties with 550 per plant (boot stage). No parasitism by Lysiphlebus testaceipes (a braconid wasp) seen in western area but light parasitism apparent in some northeast district fields. (Bell).

OKLAHOMA - S. graminum increased rapidly in sorghum in Texas County. Ranged up to 5,000 per plant in some fields, averaged 250 per plant in many fields. Many fields treated. Ranged 10-50 per plant in most Cimarron County sorghum. Averaged 25 per leaf in Greer County. (Okla. Coop. Sur.). TEXAS - Increased on grain sorghum in Trans-Pecos, Rolling Plains, and High Plains areas during period July 16-20. Increased on this crop in Rolling, South, and High Plains during period July 23-27. Late in period, populations peaked in Hale County; most treated fields in county showed decrease due to parasitism and migration. Parasitism ranged 1-42 percent in some fields. Activity increased in Knox County in Rolling Plains; ranged 100-2,000 on undersides of sorghum leaves in scattered fields. In some fields 75-90 percent of plants infested, damage extensive to larger lower leaves; some controls applied. Ranged light to moderate in older sorghum in other areas of Rolling Plains. Continued to increase in High Plains, especially in Potter County area. Activity decreased in most fields in Pecos and Reeves Counties in Trans-Pecos area due to heavy rain showers; ranged 1-2 colonies per leaf with averages of 2-8 greenbugs per colony. Damaged sorghum in isolated areas of Tom Green County. (Latham et al.).

ARKANSAS - S. graminum very light in White County grain sorghum. This is a new county record. (Boyer). MISSOURI - Light on lower leaves of sorghum in central and northwest areas. Colonies small, very little leaf discoloration observed. (Munson).

POTATO LEAFHOPPER (Empoasca fabae) - WISCONSIN - Up to 40 per sweep noted in some central area alfalfa, but counts generally near normal in most regrowth alfalfa. Increased noticeably in soybeans, with some damage to crop in one area of Sauk County. Counts about 10 per linear foot of soybeans along western edge of State, damage not readily apparent. Some infestations in lima and snap beans noted in western counties and in southeast area, mostly in marginal rows. (Wis. Ins. Sur.). MICHIGAN - Damaged some alfalfa in Ingham and Kalamazoo Counties. Damage most apparent in fields planted without nurse crop last spring. (Tesar et al.). Numerous in potato fields not treated with systemic at planting time. (Cress).

OHIO - Population and damage of Empoasca fabae increased statewide. Heaviest adult and nymphal infestations occurred in Butler (6 per sweep) and Franklin (8 per sweep) Counties. Severe damage noted in Clinton County soybeans. About 40 acres with two varieties involved. Visible feeding damage to soybeans has not occurred in recent years. Current damage in Clinton County described as most severe in commercial field in 13 years. (Fox, Blair). WEST VIRGINIA - Heavy, caused serious "hopperburn" to potatoes in 12 fields in Nicholas, Webster, parts of Clay, Upshur, and Randolph Counties. (Gillespie). MARYLAND - Decreased to 20-50 per 10 sweeps in central area alfalfa. Decrease due to harvest of second cutting in most fields. Expected to increase sharply with hot August weather. (U. Md., Ent. Dept.). TENNESSEE - Damaged alfalfa in all areas of State. Ranged 25-30 per sweep. (Mullett).

TOBACCO BUDWORM (Heliothis virescens) - MARYLAND - Still heavy in southern area. Infestations of 10-30 percent common in most tobacco. Most larvae in last instar and expected to pupate within 7 days. About 10 percent of infested plants host first and second instars. Second generation expected to be heavy. Treatments still ineffective due to habit of feeding within hidden bud. Poundage loss due to heavy infestations expected. (U. Md., Ent. Dept.).

TOBACCO HORNWORM (Manduca sexta) - KENTUCKY - Infestations on tobacco by county as follows: Woodford - 9 percent, plants damaged, 10-15 percent foliar loss; Fleming - 3.5 percent damage, 12 percent loss; Bath - 14 percent damage, 5 percent loss; Montgomery 10 percent damage, 7.5 percent loss; Garrard, Anderson, and Boyle - one percent damage. Heavy in Warren County. (Barnett). OHIO - Fifth-instar larvae averaged 2 per 300 square feet of 16-inch-tall mature potatoes in Mercer County. Damage ranged 25-50 percent per plant. (Eischen).

SPOTTED ALFALFA APHID (Therioaphis maculata) - WISCONSIN - Continued heavy in scattered alfalfa fields. Averaged 400+ per sweep in field in southern Columbia County, about 100 per sweep in southern Trempealeau County field. About one per sweep noted in alfalfa as far north as Barron County. (Wis. Ins. Sur.).

CORN, SORGHUM, SUGARCANE

CORN ROOTWORMS (Diabrotica spp.) - KANSAS - Adults economic in isolated fields of silking corn in northeast district; some fields treated. Adult counts in silking corn in east-central district light, averaged less than 2 per plant; mostly D. virgifera (western corn rootworm) with trace infestations of D. undecimpunctata howardi (southern corn rootworm). D. virgifera adults averaged about 2 per plant in cornfields surveyed in northwest and west-central districts; 6-7 per plant noted in field in Gray County, southwest district. (Bell). NEBRASKA - D. virgifera and D. longicornis adults increased, damaged silks in Phelps County. (Cooksley). Adults, 6-8 per plant, noted in several seed-corn fields being detasseled near North Bend, Dodge County. (Roselle). Treatment recommended for one Thurston County field with 8-9 per plant clipping silks. (Roselle, Koinzan). Ranged 12-15 per plant in one Scotts Bluff County field. Also noted moving into and damaging border rows in dry bean field. (Hagen).

WISCONSIN - Diabrotica spp. adult emergence about complete July 27; usually does not occur until about August 10. Early emergence suggests early egg-laying period can be expected. (Wis. Ins. Sur.). KENTUCKY - D. longicornis and D. undecimpunctata howardi adults averaged 1.5 per ear of corn and fed on silks in Fleming County; averaged 1.6 per plant in Boyle County. (Barnett).

WESTERN CORN ROOTWORM (Diabrotica virgifera) - UTAH - Severely damaged 15 acres of commercial sweet corn at North Logan, Cache County; also damaged corn at Richmond and Providence. (Roberts, Burtenshaw). MISSOURI - Averaged 1 adult per corn plant in fields checked in central area. (Thomas). Ranged 0.3-8 per plant in northwest area. (Munson). INDIANA - Adult taken in Hamilton County July 24, 1973, by Greulach. This is a new county record. Additional specimens recovered later in same county. (Turpin). MICHIGAN - Adults found in cornfield in Byron Township, Kent County, July 24. (Knisely).

NORTHERN CORN ROOTWORM (Diabrotica longicornis) - NEW JERSEY - Adults heavy on corn near Alpha, Asbury, and Belvidere, Warren County, July 20, and east of Newton, Sussex County, July 24. (Ins.-Dis. Newsltr.). MARYLAND - First adults of season taken in sweet corn in Queen Annes and Kent Counties. Ranged 1-2 per ear in several fields. (U. Md., Ent. Dept.).

SAP BEETLES - MARYLAND - Carpophilus lugubris (dusky sap beetle) reached economic levels in sweet corn. Adults in about 95 percent of sweet corn fields; heaviest count averaged 25 per 100 plants. Egg counts on silks peaked at 18 percent in heaviest infested fields. Most ear damage caused by feeding larvae. Treatments applied when egg counts exceed 5 percent. (U. Md., Ent. Dept.). WISCONSIN - Very heavy infestations of Glischrochilus quadrisignatus in corn caused concern to some canners. Most occurred in tunnels of Ostrinia nubilalis (European corn borer), but large numbers located in silks in some cases. Serious damage to kernels of sweet corn occurred in some fields where ears exposed. (Wis. Ins. Sur.).

EUROPEAN CORN BORER (Ostrinia nubilalis) - OKLAHOMA - Two larvae taken from corn in Texas County by S. Coppock and W. Massey. This is a new county record. (Okla. Coop. Sur.). KANSAS - Trace in nearly all cornfields surveyed in northwest and west-central districts. First-generation moth catches in light traps increased in northeast and north-central districts. Second-generation egg masses found on 6 percent of late 5-foot corn plants in Douglas County; none hatched. (Bell). MINNESOTA - Surveys showed no significant increase in populations. First-generation pupation increased; second-generation moths emerged, laid eggs within few days. From all indications, second generation will be at least 7 days ahead of 1972. If warm, dry weather continues second generation may be heavier than first generation. (Minn. Pest Rpt.).

WISCONSIN - Weather continued favorable for development of O. nubilalis. Second moth flight underway in southern and central counties. In eastern counties near Lake Michigan, no definite end of first flight apparent; some canners report sweet corn treated on regular basis to cope with heavy larval infestations. Borers heavy in more advanced corn; now reaching full growth, will constitute large reservoir for next generation and post serious threat to mid and late-season sweet corn. Dissection of corn plants in southern counties indicates second moth flight can be expected

August 5. Special alert issued for canners of sweet corn. Heavy populations possible for later fields of dent corn; fields should be examined about August 10. (Wis. Ins. Sur.). ILLINOIS - Preliminary survey of first-generation O. nubilalis borers indicates very light populations in east and east-southeast districts; averaged less than one per 100 corn plants. (Ill. Ins. Rpt.). INDIANA - Egg laying observed in Tippecanoe County cornfield; some hatching. (Sillings). OHIO - Second-generation moth emergence increasing rapidly in Bowling Green area, Wood County. (Farison, Kings). Emergence increases in Wayne County less marked. (Rings).

MARYLAND - Heaviest O. nubilalis adult light trap catches recorded from Harford County, averaged 30 per night July 20-23. Egg laying heavy on Eastern Shore sweet corn. Heaviest egg mass counts averaged 15 per 50 plants. First and second instars still found in silking field corn in all areas east of Queen Annes County. Pupation continued in Frederick and Washington Counties. Second-generation larvae expected in central area fields within 7 days. (U. Md., Ent. Dept.). DELAWARE - Adults still heavy in most areas, egg masses averaged 1 per 10-15 corn plants in Sussex County. (Burbutis, Davis). NEW JERSEY - Severely injured plants in one no-till cornfield near Ringoes, Hunterdon County, noted July 18. One to three full-grown borers found in each plant. Plants very ragged, many tassels broken. (Ins.-Dis. Newsltr.). MAINE - No adults in traps this period. No heavy infestations expected except, possibly, in isolated fields or in areas not observed. Almost all cornfields have 1-2 percent infestation. (Gall).

FALL ARMYWORM (Spodoptera frugiperda) - KANSAS - Third and fourth-instar larval infestations significant but subeconomic and damaged late 3 to 4-foot corn in Linn County; 30-55 percent of whorls infested. Light in late 5-foot corn in Douglas County and in late sorghum in Coffey, Osage, and Wabaunsee Counties; some apparent pupation. (Bell). OKLAHOMA - Damaged 25 percent of sorghum stalks in some areas of Greer County; moderate in Ottawa County. Light in Garvin County broomcorn. (Okla. Coop. Sur.). ALABAMA - Full-grown larvae damaged most ears in large Baldwin County cornfield. Larvae damaged young corn in Lee County. (Coats, Hagler).

BLACK CUTWORM (Agrotis ipsilon) - OREGON - Larvae damaged late sweet corn plantings at scattered localities in Willamette Valley. Damage restricted to stalk at or below ground level which caused plants to wilt and collapse. Nearly full-grown larvae observed near Stayton, Marion County, making treatments impractical. (Penrose, Hay).

WESTERN BEAN CUTWORM (Loxagrotis albicosta) - KANSAS - Moths in light traps continued to increase in Greeley County, but numbers remain much lower than at same time in 1972. First egg masses of season found on corn (generally early tassel stage) in Wichita, Sherman, and Cheyenne Counties. (Bell).

SORGHUM WEBWORM (Celama sorghiella) - TEXAS - Activity increased on maturing grain sorghum throughout south-central area. Controls applied in many fields. Also heavy in Navarro County. (Cole, Hoelscher).

SORGHUM MIDGE (Contarinia sorghicola) - TEXAS - Heavy on late sorghum throughout south-central area; damage severe in all unprotected fields checked. Midges heavy in fields checked in north-central area. Noted in grain sorghum in Jones and Knox Counties in Rolling Plains. Counts generally ranged up to 2 midges per 2-5 heads examined. Reported from Haskell, Fisher, Shackleford. Throckmorton, Baylor, and Stonewall Counties. (Cole et al.). First-generation midges on Johnsongrass peaked about July 1; emergence decreased week of July 3-9. (McIntyre). TENNESSEE - Infested most late planted milo and sorghum. (Locke).

CORNFIELD ANT (Lasius alienus) - INDIANA - Swarm of alate males and females 0.5 mile in diameter observed July 20 in Boone County, about 2 miles south of Lebanon and about 3 miles northwest of heavy thunderstorm. Temperature 85 degrees F., wind about 10 m.p.h., southwest. Numbers dense enough to impair visibility of motorists in area. (Henderson).

SMALL GRAINS

EUROPEAN CORN BORER (Ostrinia nubilalis) - MICHIGAN - Damaged some wheat in St. Joseph County and oats in Saginaw County. (Henningson, Vasold).

ENGLISH GRAIN APHID (Macrosiphum avenae) - IDAHO - Infested 40 acres of spring wheat in early dough stage at Aberdeen, Bingham County. (Sandvol).

TURF, PASTURES, RANGELAND

FALL ARMYWORM (Spodoptera frugiperda) - TEXAS - Problem on pastureland and Coastal Bermuda grass pastures in Erath County; controls applied in this area and in Montgomery and Comal Counties. (Hoelscher et al.).

GREEN JUNE BEETLE (Cotinis nitida) - MISSOURI - Adults heavy in fescue pastures in south-central area. Oviposition underway; about 5 percent of eggs hatched. (Huggans). TENNESSEE - Adults very heavy over permanent pastures in western area. (Locke).

BANKS GRASS MITE (Oligonychus pratensis) - NEVADA - Heavy infestation of this species and Anaphothrips obscurus (grass thrips) on 80 acres of timothy hay required treatment. (Adams, Hilbig).

FORAGE LEGUMES

VARIEGATED CUTWORM (Peridroma saucia) - OREGON - Larvae heavy in some mid-Willamette Valley alfalfa; feeding preventing regrowth following cutting. (Hay). NEVADA - Generally light on seed alfalfa at Orovada, Humboldt County, with some apparent heavy, localized spotty infestations. Following treatment for other pests, dead P. saucia larvae averaged 12 per foot of furrow in heavily infested area. Many larvae ready to pupate. (Stitt).

GREEN CLOVERWORM (Plathypena scabra) - INDIANA - Larvae defoliated up to 30-40 percent of alfalfa in some fields in south-central district. (Huber). OKLAHOMA - Larvae ranged 9-27 per 10 sweeps of alfalfa in Cleveland, McClain, and Garvin Counties. (Okla. Coop. Sur.).

ALFALFA CATERPILLAR (Colias eurytheme) - COLORADO - Larvae ranged 0-20 per 100 sweeps of alfalfa in southeast counties. (Schweissing).

PLANT BUGS (Lygus spp.) - WASHINGTON - L. hesperus and L. elisus adults commonly ranged 3-10 per sweep following recent hot weather and movement from other crops onto alfalfa seed fields; especially difficult to control in lower Yakima Valley. (Menke et al.). COLORADO - Counts variable in alfalfa in southeast counties, ranged 0-1,500 per 100 sweeps. (Schweissing). OKLAHOMA - L. lineolaris (tarnished plant bug) ranged 9-24 per 10 sweeps of alfalfa in Cleveland, McClain, and Garvin Counties. (Okla. Coop. Sur.).

GRASSHOPPERS - WISCONSIN - Counts of 40+ per square foot in alfalfa noted in Kettle Moraine area in southeast district, in sandy soil areas of Rock and Green Counties, and along Mississippi River north of La Crosse County and near Alma and Cockrange in Buffalo County; populations declined in some locations since 1972, notably in Pepin and Dunn Counties. Melanoplus femurrubrum adults noted in some fields in La Crosse County. Large numbers of Dissosteira carolina adults sighted west of Centerville, Trempealeau County. (Wis. Ins. Sur.).

GUAR MIDGE (Cecidomyia texana) - TEXAS - Infested guar in several Knox County fields. (Boring, July 20).

SOYBEANS

GREEN CLOVERWORM (Plathypena scabra) - IOWA - Larvae increased in numbers. Soybeans damaged in Polk and Scott Counties. Treatments required. Third to fifth-instar larvae averaged 17 per row foot in Scott County, 12 per row foot in 50-acre Polk County field. Larvae evenly distributed throughout fields. Damage more apparent this year as soybeans reduced in size in many fields. (Iowa Ins. Sur.). KENTUCKY - Damaged soybeans in Russell County, controls applied. Larvae defoliated 35-40 percent of 25-acre Todd County field; averaged 9 per row foot. (Barnett, Raney). ALABAMA - Larvae of this species and Spodoptera ornithogalli (yellowstriped armyworm) fed on several thousand acres of soybean leaves in Lauderdale, Colbert, Limestone, and other northern counties. (Burns et al.).

YELLOWSTRIPED ARMYWORM (Spodoptera ornithogalli) - TENNESSEE - Heavy, 1-2 per stalk in all fields of 6-inch soybeans in Franklin County. (Cagle).

BLACK CUTWORM (Agrotis ipsilon) - MISSOURI - Continued to infest soybeans in northeast area. Larvae averaged 2 per row foot in some overflow areas along Mississippi River. (Thomas). KENTUCKY - Totally destroyed 180 acres of soybeans in Livingston County. (Barnett, Raney).

BEET ARMYWORM (Spodoptera exigua) - NORTH CAROLINA - Severaly defoliated soybeans in Pamlico County field and in Pasquotank County field. Controls applied. (Falter).

VELVETBEAN CATERPILLAR (Anticarsia gemmatalis) - FLORIDA - Larvae averaged one per 3 row feet in 3 to 4-foot soybeans in first-bloom stage at Gainesville, Alachua County. (Fla. Coop. Sur.).

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) - FLORIDA - Damaged 5 percent of 12-acre stand of soybeans at Gainesville, Alachua County. (Fla. Coop. Sur.).

MEXICAN BEAN BEETLE (Epilachna varivestis) - MARYLAND - Second-generation adults laying eggs on soybeans in areas east of Talbot County and southeast of Prince Georges County. Adults ranged 1-5 per 20 row feet. Fields in central area remained clean. Populations expected to increase very rapidly on lower Eastern Shore and in southern area during August. Late summer trends should be evident by mid-August. (U. Md., Ent. Dept.).

PEANUTS

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) - TEXAS - Increased in Blacklands area and about Stephenville, Erath County. In Comanche County, up to 20 percent of peanut plants infested at one site; 7-percent infestation noted at Gustine. Economic near De Leon, ranged 11-15 percent. (Hines, Hoelscher). GEORGIA - Ranged light to heavy in peanuts over southwest area. (Womack).

GRANULATE CUTWORM (Feltia subterranea) - ALABAMA - Larvae ranged 3-5 per row foot in some peanut fields in Crenshaw County. Lighter infestations occur countywide. Some treatments applied. (Smith et al.).

COTTON

BOLL WEEVIL (Anthonomus grandis) - SOUTH CAROLINA - Second weevil emergence spotty across State. (Sparks). TENNESSEE - Averaged 6 percent punctured squares in infested fields in southern tier of counties. First-generation "hatchout" underway. Conditions ideal for further increase. (Locke). GEORGIA - Percent punctured squares ranged 0-36 over southern area. (Womack). ALABAMA - Punctured squares still heavy in southern and central areas. Most fields averaged 18-80 percent with treatments applied throughout 175,000 acres. Weather favorable for survival of larvae and pupae. Square infestations heavy at higher elevations of northern area. Ranged 10-40 percent with most of 150,000 acres treated. Infestations in 85-95 percent of cotton in Tennessee Valley counties light, ranged 2-15 percent with some isolated counts at 25-40 percent. (McQueen). OKLAHOMA - Punctured squares ranged up to 14 percent in Jackson County, 10 percent in Caddo County, and 1 percent in Washita County. (Okla. Coop. Sur.).

BOLLWORMS (Heliothis spp.) - OKLAHOMA - H. zea (bollworm) eggs ranged 0-28 per 100 terminals, larvae 0-24 per 100 terminals, and damaged squares averaged 8 percent in Jackson County. Damaged squares averaged 6 percent in Greer County. Eggs very heavy, larvae still light in Caddo County. H. virescens (tobacco budworm) light in Caddo County. Damaged squares increased in Wagoner and Bryan Counties, ranged 6-22 percent in some fields. (Okla. Coop. Sur.). ARKANSAS - H. zea and H. virescens still light on cotton in most areas of State. Eggs heavy in some Miller County fields. Sugarline and light trap records show very few adults active. Heavy count noted only at Newport, Jackson County, July 23. On one cotton sugarline 145 H. zea adults and 6 H. virescens adults noted; 135 H. zea and 17 H. virescens on second line. All on one-half mile of row. (Boyer). ALABAMA - Heliothis spp. larvae and eggs increased in southern and central area

cotton. Larvae ranged 4-45 per 100 terminals in some fields where controls applied. Flights still light but increase expected in northern area. (McQueen). GEORGIA - Increased; eggs averaged 100+ per 100 terminals in many southern area fields. Damage increased where adequate controls not applied. (Womack). TENNESSEE - H. zea eggs or larvae ranged 1-6 per 100 terminals in infested fields. Further increase expected next 14 days. (Locke). SOUTH CAROLINA - H. zea and H. virescens moths in light traps peaked about second week in July in much of State. Egg laying currently heavy in lower Costal Plain; not yet apparent in central part of State. (Sparks).

COTTON LEAFPERFORATOR (Bucculatrix thurberiella) - ARIZONA - Appared in some Yuma County cotton fields. Fields should be checked for buildup. (Ariz. Coop. Sur.).

TARNISHED PLANT BUG (Lygus lineolaris) - OKLAHOMA - Ranged 5-30 per 100 cotton plants in Wagoner, Muskogee, and Bryan Counties. (Okla. Coop. Sur.). ALABAMA - Adults and nymphs damaged cotton in Madison, Limestone, Colbert, and other Tennessee Valley counties. (Magnusson et al.).

COTTON APHID (Aphis gossypii) - OKLAHOMA - Heavy, spot infestations ranged 25-150 per leaf in some Greer County fields. (Okla. Coop. Sur.).

COTTON FLEAHOPPER (Pseudatomoscelis seriatus) - OKLAHOMA - Averaged 62 per 100 cotton terminals in Washita and Caddo Counties and ranged 0-20 per 100 terminals in southwest counties. (Okla. Coop. Sur.).

TOBACCO

GREEN PEACH APHID (Myzus persicae) - MARYLAND - Began to increase in Prince Georges County tobacco. Infested about 50 percent of tobacco in St. Marys, Charles, and Calvert Counties. Treatments should be applied to one in twenty fields surveyed in these three southern area counties. (U. Md., Ent. Dept.).

TOBACCO FLEA BEETLE (Epitrix hirtipennis) - KENTUCKY - Damaged tobacco statewide. Adults averaged 10 per plant in western areas and 25+ per plant in Barren County. Second generation emerged, caused marked increase. (Barnett, Jones).

MISCELLANEOUS FIELD CROPS

SUNFLOWER BEETLE (Zygogramma exclamationis) - NORTH DAKOTA - Up to 50 larvae per head in Walhalla area, Pembina County. Controls applied. (Kaatz). Larvae present in most sunflowers surveyed in Barnes, Steele, Griggs, Foster, and Traill Counties. Ranged up to 80 (average 24) percent of plants infested with up to 8 (average 1.5) larvae per infested plant. (Brandvik).

VARIEGATED CUTWORM (Peridroma saucia) - WASHINGTON - Average of 4 larvae per square yard fed on leaves of peppermint near Longview, Cowlitz County. Grower plans treatment of about 500 acres. (Pennell, O'Connor).

POTATOES, TOMATOES, PEPPERS

VARIEGATED CUTWORM (Peridroma saucia) - OREGON - Infestations spotty in later planted Washington County potatoes. Averaged about 2 per row foot and much lighter than those in earlier plantings of Norgolds. (Collins). ILLINOIS - Caused moderate damage to untreated tomatoes in Champaign County; damaged up to 25 percent of tomatoes in some plantings. (Ill. Ins. Rpt.).

EUROPEAN CORN BORER (Ostrinia nubilalis) - NORTH CAROLINA - Larval damage to commercial peppers heavier than for past 2 years in Harnett and Sampson County area of central Coastal Plain. (Scott).

GREEN PEACH APHID (Myzus persicae) - NEW JERSEY - Built up rapidly in many central and southern county pepper fields. Some fruits sticky with honeydew. (Ins.-Dis. Newsltr.). MICHIGAN - Light to moderate in several pepper fields in Bay and Saginaw Counties. Growers advised to apply controls immediately. (Cress).

GENERAL VEGETABLES

ONION THRIPS (Thrips tabaci) - COLORADO - Ranged 0-30 per onion plant in southeastern counties. (Schweissing).

A STINK BUG (Chlorochroa uhleri) - CALIFORNIA - Adults heavy in asparagus plantings in Stockton area, San Joaquin County. (Cal. Coop. Rpt.).

DETECTION

New State Records - MAY BEETLES (Phyllophaga spp.) - MARYLAND - Two specimens of P. aemula collected around lights at Shad Landing State Park, Worcester County, July 13 and July 14, 1973, by C.E. Miller. Determined by M.W. Sanderson. (Miller). WEST VIRGINIA - P. marginalis adults collected in blacklight trap at Short Mountain in Hampshire County July 2, 1967, by E.J. Ford, Jr. Determined by M.W. Sanderson. (Ford).

A CONIFER SAWFLY (Zadiprion townsendi) - UTAH - San Juan County. (p. 515). A GEOMETRID MOTH (Thysanopyga intractata) - ALABAMA - Crenshaw County. (p. 514). LONE STAR TICK (Amblyomma americanum) - KANSAS - Labette County. (p. 517).

New County Records - ASIATIC OAK WEEVIL (Cyrtepistomus castaneus) WEST VIRGINIA - Pocahontas (p. 515). EUROPEAN ALDER LEAFMINER (Fenusa dohrnii) WEST VIRGINIA - Randolph (p. 516). EUROPEAN CORN BORER (Ostrinia nubilalis) OKLAHOMA - Texas (p. 507). A GEOMETRID MOTH (Hydria undulata) WEST VIRGINIA - Pendleton (p. 515). GREENBUG (Schizaphis graminum) ARKANSAS - White (p. 505). IMPORTED WILLOW LEAF BEETLE (Plagiodera versicolora) WEST VIRGINIA - Monroe, Pendleton, Nicholas (p. 515). SADDLED PROMINENT (Heterocampa guttivitta) WEST VIRGINIA - Pocahontas (p. 515). SILVERSPOTTED SKIPPER (Epargyreus clarus) WEST VIRGINIA - Pendleton (p. 515). WESTERN CORN ROOTWORM (Diabrotica virgifera) INDIANA - Hamilton (p. 507).

DECIDUOUS FRUITS AND NUTS

WALNUT CATERPILLAR (Datana integerrima) - ALABAMA - Damaging broods developed in several Marengo County pecan orchards. (Yates). TEXAS - Heavy on pecans in south-central area, Tom Green County, and other scattered locations. Moderate but widespread at Cuerno, De Witt County; several growers treated in this area. (Wright). OKLAHOMA - First-generation damage very heavy on pecan trees in Garvin (especially Pauls Valley area) and northern Murray Counties. Many trees 80-100 percent defoliated. Early hatched larvae began to leave trees to pupate in Payne County. (Okla. Coop. Sur.).

FALL WEBWORM (Hyphantria cunea) - KANSAS - Infested walnut, pecan, persimmon, and hickory in east-central district; heaviest (up to 6 webs per tree on walnut) in Linn and Miami Counties. Further north and east fewer trees infested; those with colonies of larvae usually had no more than one or two. (Bell). TEXAS - Activity increased throughout most pecan areas of State. Populations especially heavy in San Angelo area, Tom Green County. (McWhorter).

BLACK PECAN APHID (Tinocallis caryaefoliae) - ALABAMA - Mixed populations of this species and Monellia spp. (yellow aphids) damaged pecans in Marengo, Lowndes, and Bullock Counties. (Yates et al.).

APPLE MAGGOT (Rhagoletis pomonella) - Fly emergence more uniform and heavier. Flies averaged 35 and 43 per bait trap in 2 abandoned orchards in central and northern areas. Females laying eggs. (Thompson).

EUROPEAN RED MITE (Panonychus ulmi) - MICHIGAN - Heavy enough to cause bronzing of foliage. Summer generations began to overlap; eggs, immatures, and adults present. About 30 percent of apple pest management orchards show various degrees of leaf bronzing within or throughout trees. (Thompson). OREGON - Seriously infested two prune orchards south of Forest Grove, Washington County. Some trees partially defoliated. (Collins).

ORNAMENTALS

SPRUCE SPIDER MITE (Oligonychus ununguis) - OREGON - General, very heavy infestation occurred on 35-acre Douglas-fir Christmas tree planting at Camp Adair, Benton County. Foliage brown on many trees, some plants died. Total planting treated. (Capizzi).

A GEOMETRID MOTH (Thysanopyga intractata) - ALABAMA - Full-grown larvae collected from youpon holly in Luverne, Crenshaw County, June 19, 1973, by G. Hendley. Heavy population caused heavy defoliation. Determined by D.M. Weisman. This is a new State record. (Shumack et al.).

A CICADELLID LEAFHOPPER (Erythroneura aclys) - OHIO - Heavy egg, nymphal, and adult population caused heavy damage to redbud trees in Columbus, Franklin County. Treatments applied. (Davidson).

CONIFER SAWFLIES - MAINE - Neodiprion pinetum larvae fed on white pine in southwestern areas. Some nursery stock damaged. Species can be especially destructive locally. Controls more effective when larvae small. (Gall). OKLAHOMA - Trace to light numbers of mature N. excitans larvae and/or newly made cocoons noted on shortleaf pine in eastern Pushmataha, eastern Latimer, and southeastern Haskell Counties. Heaviest in northeastern Latimer County (Robbers Cave State Park area); occasional old trees showed light defoliation and one heavily defoliated tree noted. Larvae observed in Pittsburg County. (Okla. Coop. Sur.). UTAH - Zadiprion townsendi larvae collected on foliage of ponderosa pine (Pinus ponderosa) at Chippean Ridge near Blanding, San Juan County, November 2, 1972, by A. Dahlgren. Determined by D.R. Smith. This is a new State record. (Gailbraith). This sawfly is known to occur from Nebraska to New Mexico and Arizona. (PPQ).

VARIABLE OAKLEAF CATERPILLAR (Heterocampa manteo) - NORTH DAKOTA - Eggs hatched in Ft. Totten area, Benson County. Up to 40 first-instar larvae per leaf on basswood. About 1 percent of leaves skeletonized. Some larval mortality occurred. (Brandvik).

SADDLED PROMINENT (Heterocampa guttivitta) - WEST VIRGINIA - Larvae caused 5 percent damage to foliage of 5 sugar maple trees in Pocahontas County. Collected and determined by J.D. Hacker. This is a new county record. (Hacker).

A GEOMETRID MOTH (Hydria undulata) - WEST VIRGINIA - Larvae caused less than 5 percent damage to one black cherry tree in Pocahontas County. Caused 25 percent damage to foliage on 20 percent of wild black cherry trees in Pendleton County. Pendleton is a new county record. (Hacker).

A SPHINX MOTH (Pachysphinx occidentalis) - NEVADA - Larvae moderate to heavy on small poplars planted as windbreak trees in southern Washoe County. (Nev. Coop. Rpt.).

SILVERSPOTTED SKIPPER (Epargyreus clarus) - WEST VIRGINIA - Larvae taken on black locust, no damage noted, in Pendleton County. Collected and determined by J.D. Hacker. This is a new county record. (Hacker).

ASIATIC OAK WEEVIL (Cyrtepistomus castaneus) - WEST VIRGINIA - Adults taken from light trap in Pocahontas County. Collected and determined by J.D. Hacker. Damage light, less than 5 percent on oaks in area. This is a new county record. (Hacker).

IMPORTED WILLOW LEAF BEETLE (Plagiodera versicolora) - WEST VIRGINIA - Larvae caused 50 percent damage to foliage of all willow trees in Monroe County. Adults present. Collected and determined by A.E. Cole. (Cole, Hacker). Larvae damaged 90 percent of 25 willow trees in Pendleton County, pupae present. Larval damage also noted on willow trees (80 percent) in Nicholas County. Collected and determined by J.D. Hacker. These are new county records. (Cole, Hacker).

LOCUST LEAFMINER (Xenochalepus dorsalis) - KENTUCKY - Defoliated locust trees in Carroll, Gallatin, Oldham, Franklin, Shelby, Montgomery, Woodford, and Anderson Counties, most trees damaged to some degree. Defoliation of 80-100 percent common. (Barnett).

EUROPEAN ALDER LEAFMINER (Fenusa dohrnii) - WEST VIRGINIA - Damage to 50-60 percent of European black alder on 50 acres of strip mine land in Randolph County, noted July 19. Collected and determined by A.R. Miller. This is a new county record. (Hacker).

MAN AND ANIMALS

SCREWWORM (Cochliomyia hominivorax) - Total of 375 cases reported in continental U.S. during period July 15-21 as follows: Texas 91, New Mexico 58, Arizona 226. Total of 587 cases confirmed from Mexico. Number of sterile flies released this period totaled 134,237,400 as follows: Texas 92,373,000; New Mexico 10,215,000; Arizona 29,948,000; California 1,701,000. Total of 57,492,000 sterile flies released in Mexico. (Anim. Health).

FACE FLY (Musca autumnalis) - GEORGIA - Heavy on cattle in Spalding County. (Dupree). KENTUCKY - Adults averaged 15.4 on Woodford County Angus cattle and 37.4 on mixed breeds in Bath County. Also heavy in Fleming County. Pinkeye increased in Fleming County, problem not as bad as past years. (Barnett). INDIANA - Four-day counts on 5 bulls and 9 steers in Tippecanoe County averaged 7.2 (ranged 0-24) per bull and 12.9 (range 0-40) per steer. (Christensen). IOWA - Ranged 2-16 (average 8) per head on untreated Holstein heifers in Polk County, 18-40 (average 26) on untreated Angus cattle in Story County. (Iowa. Ins. Sur.).

MOSQUITOES - WISCONSIN - Heavy in parts of Washburn, Winnebago, Bayfield, and Chippewa Counties; moderately annoying in few localities in most counties. Annoyance to dairy cattle ranged moderate to severe in many localities. (Wis. Ins. Sur.). MINNESOTA - Light trap counts for period ending July 20 decreased markedly from previous period. Evening bite collections decreased in Metropolitan Mosquito Control District; 9 of 24 collections negative. Coquillettidia perturbans dominant species in these collections; also second in number in daytime bite collections exceeded by Aedes stimulans, a single-brooded spring species. Aedes triseriatus increased. (Minn. Pest Rpt.).

HORN FLY (Haematobia irritans) - GEORGIA - Heavy on cattle in Spalding County. (Dupree). ALABAMA - Heavy in Montgomery, Tallapoosa, and other southern counties. Treatments constantly needed. (Burns et al.). MISSISSIPPI - Still light on livestock in Oktibbeha, Clay, Chickasaw, and Monroe Counties; averaged 300+ per animal. (Robinson). TEXAS - Activity increased on livestock in most counties in Trans-Pecos and Tom Green County areas. Increased in Panhandle area due to moist weather. (McWhorter et al.). OKLAHOMA - Averaged 400 per head on cows and 2,000 per head on bulls in Payne County. Heavy in Mayes and Comanche Counties, moderate in Kay County. (Okla. Coop. Sur.). IOWA - Ranged 30-200 (average 86) per head on untreated Holstein heifers in Polk County, 60-125 (average 85) on untreated Angus cattle in Story County. (Iowa. Ins. Sur.).

STABLE FLY (Stomoxys calcitrans) - WISCONSIN - Severely annoyed beef cattle in central counties. Annoyance ranged light to moderate to dairy cattle in all areas. Still problem to humans in some areas where pest able to develop in moist accumulations of vegetation. (Wis. Ins. Sur.). IOWA - Ranged 0-42 per leg (average 12) on dairy cattle in Polk County. (Iowa. Ins. Sur.).

TABANID FLIES - OKLAHOMA - Tabanus spp. ranged 25-30 per head on cattle in two areas of Sequoyah County. T. sulcifrons ranged 1-2 per head on steers in McClain County; moderate in Comanche County. (Okla. Coop. Sur.).

TICKS - MISSISSIPPI - Dermacentor variabilis (American dog tick), Rhipicephalus sanguineus (brown dog tick), and Amblyomma americanum (lone star tick) prominent in northeast counties. (Norment). OKLAHOMA - A. americanum ranged 20-30 per head on cattle in Sequoyah County. Larvae very heavy in wooded areas, moderate in Mayes County. (Okla. Coop. Sur.). KANSAS - A. americanum immatures collected from small female deer in Labette County October 10, 1970, by W. Peabody. Determined by J.E. Keirans. This is a new State record. (Bell).

BENEFICIAL INSECTS

A WEEVIL (Rhinocyllus conicus) - WEST VIRGINIA - Adults, pupae, and larvae recovered from curled thistle heads at 3 Monroe County sites where released July 20, 1972. Collected by J.D. Hacker, A.E. Cole, and E. Bostic, July 20, 1973. (Hacker).

A SCELIONID WASP (Telenomus alsophilae) - NORTH CAROLINA - Surveys of Alsophila pometaria (fall cankerworm) egg masses on Cowetta Hydrological Experiment Station in Macon County past 3 years showed sharp increase in incidence of this parasite. Parasitism by T. alsophilae increased from 6 percent in 1971 to 30 percent in 1972. Current parasitism about 50 percent. (USFS).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

GRASSHOPPERS - OKLAHOMA - Melanoplus differentialis and M. bivittatus ranged 10-25 per 100 sweeps in Bryan County. These and Brachystola magna heavy in Beckham, Washita, Caddo, and Roger Mills Counties. Unspecified species averaged 12 per square yard in Sequoyah County pasture. Fungus disease detected in nymphs and adults of M. differentialis, M. bivittatus, and M. packardii in spots in several east-central and south-central counties. (Okla. Coop. Sur.). NEBRASKA - Melanoplus spp. heavy in field margins, roadside ditches, and pastures in Dundy County. Ranged 12-30 per square yard. Damage light to moderate to border rows of corn and sorghum. (Koinzan). Mixed species of range grasshoppers heavy, 25-30 per square yard, in Garden County rangeland. (Andersen, Bell).

NORTH DAKOTA - Adult grasshopper rangeland survey in Sheyenne National Grasslands in Richland and Ransom Counties showed 2,700 acres with 8 or more per square yard in Hankinson area. In northern part of grasslands, about 6,000 acres with 3-7 per square yard. M. sanguinipes dominant species. (Grasser). UTAH - Grasshoppers, mostly M. sanguinipes, ranged 25-90 per square yard in alfalfa seed field adjacent to rangeland at Newton, Cache County; 15

percent winged. Twenty-acre field damaged, margins badly stripped of foliage and seed. Range species moved into alfalfa, spring grain, and other crops in several counties as nearby range plants dried. (Knowlton, Roberts). NEVADA - Camnula pellucida adults ranged 3-4 per square yard on 100 acres of native hay near Denio, Humboldt County. (Barclay, Rowe). Mostly Melanoplus sanguinipes, with some M. bivittatus and C. pellucida, ranged 20-30 per square yard on 40 acres of alfalfa in Newark Valley, White Pine County. (Marion, Peters). MONTANA - Grasshoppers infested 8,000 acres in Cascade County, 80 percent adults. Several ranchers treated to save valuable grass. Treatments also applied in Blaine, Hill, Phillips, Liberty, Toole, Pondera, Teton, and other counties. (Pratt). WASHINGTON - Cooperative control for season completed July 23 for rangeland species. Total of 1,077,696 acres treated in Adams, Benton, Douglas, Franklin, Grant, Lincoln, Klickitat, Okanogan, Spokane, Walla Walla, and Whitman Counties. In this treated total, 18,576 acres were cropland with remainder rangeland. Controls generally very good except in crops or weeds having dense foliage; Melanoplus sanguinipes dominant species. M. bivitattus, M. foedus, M. packardii, Camnula pellucida, Oedaleonutus enigma, and Aulocara elliotti also present. (PPQ).

GYPSY MOTH (Porthetria dispar) - NEW HAMPSHIRE - Adults emerged at Eaton, Carroll County, during third week of July. (Dyrkacz). RHODE ISLAND - Very few larvae found during period July 13-19. Many larvae dead in some areas; apparently due to nucleo-polyhedrosis virus. Adult males abundant, egg laying continued. (Field). PENNSYLVANIA - Male adults (8) collected at 6 locations in State College, Centre County, July 23. (Keim).

JAPANESE BEETLE (Popillia japonica) RHODE ISLAND - Adults heavy in many areas of State during period July 13-19. (DiAndrea et al.). MARYLAND - Moderate to heavy isolated populations active in Harford, St. Marys, and Charles Counties. Soybeans damaged on Eastern Shore and in southern area ranged 5-10 percent. Damage well below thresholds of 40 percent. (U. Md., Ent. Dept.). CALIFORNIA - Adult collected July 2 in Balboa Park in San Diego, San Diego County. Determined by F. Andrews. Scouting and detection trapping resulted in finding 8 additional beetles as of July 26. Cooperative eradication procedures underway. Infestations currently confined to turf areas of Morley field in Balboa Park. This pest successfully eradicated from Sacramento in 1961 and 1962. Infestation in Balboa Park is second established infestation to occur in State. (Cal. Coop. Rpt.).

PINK BOLLWORM (Pectinophora gossypiella) - ARIZONA - Infestation 20 percent in one Salt River Valley field. Increased at Safford, Graham County. Boll infestations up to 24 percent in some cotton plots at University of Arizona farm. Averaged about 10 percent (one at 39 percent found) boll infestation in Yuma Valley, Yuma County, cotton field. (Ariz. Coop. Sur.).

Corn - CORN EARWORM (Heliothis zea) trace in small planting of nearly mature sweet corn at Waimanalo, Oahu; less than 2 percent of ears infested with early instar larvae. Severe in adjacent mature corn; 90 percent of ears infested. (Kawamura).

General Vegetables - Larval infestation of MEXICAN LEAFROLLER (Amorbia emigratella) in long beans at Waimanalo appears to be increasing to levels reported in early May (see CEIR 23(19):275). Numerous larvae, mostly early instars, noted in fluted, terminal leaves. All stages of CARMINE SPIDER MITE (Tetranychus cinnabarinus) heavy in bush beans at Kamiloiki, Oahu; light in adjacent eggplant. (Kawamura).

Fruits and Nuts - Early instar larvae and eggs of a SWALLOWTAIL BUTTERFLY (Papilio xuthus) moderate on citrus tree at Halawa, Oahu; damage light. Parasitism by Trichogramma sp. (a minute egg parasite) of eggs collected during 2 consecutive weeks in late June averaged 10 and 31 percent, respectively. Eggs collected second week of July only 4 percent parasitized. (Shimoda).

Man and Animals - Mosquito collections from 57 light traps operated on Oahu during June totaled 335 Aedes vexans nocturnus and 2,403 Culex pipiens quinquemaculatus. Aedes catches ranged from zero to high of 82 at Honouliuli. Culex catches ranged from zero to high of 663 at Kawailoa. (Mosq. Control Br., State Dept. Health).

Miscellaneous Pests - Larvae of a NOCTUID MOTH (Phlegetonia delatrix) light on jaboticaba (Eugenia cauliflora) tree at Hilo, Hawaii; this is a new host record. Previously reported in State only on E. cumini, E. malaccensis, and Metrosideros collina. (Matayoshi, Miyahira). Caused heavy damage to young terminal leaves of E. cumini at Hana, Maui; 75 percent of foliage affected. (Miyahira).

LIGHT TRAP COLLECTIONS

	Temperature °F.	Precipitation (inches)	Type of trap (BL = blacklight, I = incandescent, MV = mercury vapor, O = other)	Agrotis ipsilon (black cutworm)	Estigmene acrea (salt marsh caterpillar)	Eucoa auxiliaris (army cutworm)	Paronia diffusa (wheat head armyworm)	Feltia subterranea (granulate cutworm)	Heliothis virescens (tobacco budworm)	H. zea (bollworm, corn earworm, tomato fruitworm)	Laspeyresia pomonella (codling moth)	Loxostege comitalis (alfalfa webworm)	Loxostege rantalis (garden webworm)	Loxostege sticticalis (beet webworm)	Manduca quinquemaculata (tomato hornworm)	Manduca sexta (tobacco hornworm)	Ostrinia nubilalis (European corn borer)	Peridroma saucia (variegated cutworm)	Pseudaletia unipuncta (armyworm)	Spodoptera exigua (beet armyworm)	Spodoptera frugiperda (fall armyworm)	Trichoplusia ni (cabbage looper)	Crops
ARKANSAS																							
Kelso 7/19-25			BL							5													
Newport 7/18-24			BL							20													
FLORIDA																							
Gainesville 7/20-26			BL					4		7									1	15	2		
ILLINOIS (County)																							
Ogle 7/17-23			2BL	438						1						18	202	530				225	
INDIANA (Counties)																							
Lawrence 7/12-18			BL	5	5										1		7	40					
Tippecanoe 7/12-18			BL	19	24									1		4	12	24				1	
IOWA																							
Beaconsfield 7/13-19			BL	28													9	35					
Gilbert 7/13-19			BL	20			24									35	6	94					
KANSAS																							
Goodland 7/19			BL				7										14	17		1			
Tribune 7/16, 19			BL				4			2							4	13					
KENTUCKY																							
Lexington 7/24-26			BL	1	1													5		8			
Princeton 7/20-25			BL	19	27				17	1							11	7		46		3	
MICHIGAN																							
Lenawee 7/18-25			BL													52		117				6	
Monroe 7/18-25			BL													38		112				3	
MINNESOTA																							
Crookston 7/19-25			BL														17	13					
Fergus Falls 7/19-25			BL													1		2					
MISSISSIPPI																							
Stoneville 7/20-26	73-97	None	2BL	74	6			15	10	112							1	131	4	14	267	60	
NEBRASKA																							
Mead 6/21,28,7/5			BL	32		3				10				1		64	184	547			4		

LIGHT TRAP COLLECTIONS

	Temperature °F.	Precipitation (inches)	Type of trap (BL = blacklight, I = incandescent, MV = mercury vapor, O = other)	Agrotis ipsilon (black cutworm)	Estigmene acrea (salt marsh caterpillar)	Euxoa auxiliaris (army cutworm)	Faronta diffusa (wheat head armyworm)	Feltia subterranea (granulate cutworm)	Heliothis virescens (tobacco budworm)	H. zea (bollworm, corn earworm, tomato fruitworm)	Laspeyresia pomonella (codling moth)	Loxostege comstockalis (alfalfa webworm)	Loxostege sticticalis (garden webworm)	Loxostege sticticalis (beet webworm)	Manduca quinquemaculata (tomato hornworm)	Manduca sexta (tobacco hornworm)	Ostrinia nubilalis (European corn borer)	Peridroma saucia (variegated cutworm)	Pseudaletia unipuncta (armyworm)	Spodoptera exigua (beet armyworm)	Spodoptera frugiperda (fall armyworm)	Spodoptera ornithogalli (yellowstriped armyworm)	Trichoplusia ni (cabbage looper)	Crops
NEW HAMPSHIRE																								
Dover 7/29			BL	1																				
Lee 7/23			BL																				2	
NEW JERSEY																								
Cranbury 7/19-24			6BL	12													14						6	
Evesboro 7/18-24			7BL						2								80						2	
NORTH DAKOTA																								
Bismarck 7/25			BL	3									18					4						
Fargo 7/26			BL										3				2	21					2	
OHIO																								
Wooster 7/20-26			BL	136													116	20	515			10	8	
OREGON (Counties)																								
Benton 7/19-24			BL															1						
Jefferson 7/12-18			BL	9														31						
PENNSYLVANIA (Districts)																								
Central 7/14-24			BL	14														1	33			1		
Northeast 7/14-24			BL																4					
TENNESSEE (Counties)																								
Gibson 7/23-27			BL	39	3			5	1									7	18			105	12	
Madison 7/23-27			BL	6	6			3										1	9			32	10	
VIRGINIA																								
Painter 7/17-24			BL						2								18		347		19		53	
Warsaw 7/17-24			BL						36								153		48		10		11	
WEST VIRGINIA (Counties)																								
Kanawha 7/24			BL		1														1			9	1	
Monroe 7/23			BL	1												2	1		7				1	
WISCONSIN																								
Lancaster 7/17-23			BL	3														6	36					
Mazomanie 7/16-25			BL	1													5		4					

Distinguishing Characters of the Walnut Husk Maggots of the Genus *Rhagoletis* (Diptera, Tephritidae)

George C. Steyskal 1/

In the latest revision of the genus *Rhagoletis* (Bush, 1966), 5 North American species are segregated as the *suavis* Species Group, all of which are known to live in the larval stage in the husks of various species of walnuts (*Juglans*). Two of these species are very poorly known and no data on their larvae are available - *R. boycei* Cresson from southwestern New Mexico and Arizona and northern Sonora, Mexico, at altitudes of 5,000 feet and more, and *R. zoqui* Bush, known only from the State of Hidalgo, Mexico, in *Juglans mollis* Engelm. The other 3 species may be separated as follows, using characters citied by Phillips (1946) and checked against specimens in the U.S. National Museum collections.

1 (2) Anterior spiracles with about 25 tubules, with low and broad stigmatic chamber; stomal ridges (at each side of mouthhooks) 9-10; mesal intermediate tubercles (at summit of hindmost swellings) bifid, with low, narrow ridge between their tips; posterior spiracular slits at nearly 90 degrees to each other, their tips well separated; minute body spinules in encircling rows (eastern U.S.).....*Rhagoletis suavis* (Loew)

2 (1) Anterior spiracle with at least 5 or 6 fewer tubules; stomal ridges about 7; mesal intermediate tubercles single; posterior spiracular slits with inner tips separated at most by little more than slit-width; minute body spinules confined to fusiform ventral areas (western and southern).....3

3 (4) Anterior spiracle with about 21; tubules in 2 groups; upper and lower slits of posterior spiracle at acute angle to each other (about 60 degrees), their tips about slit-width apart.....*Rhagoletis completa* Cresson

4 (3) Anterior spiracle with about 11 tubules in single even row; upper and lower slits of posterior spiracle at nearly 90 degrees to each other, their tips separated by less than slit-width.....*Rhagoletis juglandis* Cresson

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Bush, G.L. 1966. The taxonomy, cytology, and evolution of the genus *Rhagoletis* in North America (Diptera, Tephritidae). Bull. Mus. Comp. Zool., Harvard Univ. 134, no. 11:431-562.

Phillips, V.T. 1946. The biology and identification of trypetid larvae (Diptera, Trypetidae). Mem. Amer. Entomol. Soc. 12: 1-161, pls. 1-16.

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WEATHER OF THE WEEK ENDING JULY 30

Reprinted from Weekly Weather and Crop Bulletin supplied by Environmental Data Service, NOAA.

HIGHLIGHTS: Cool Canadian air dominated much of the Nations weather with most temperatures averaging 1 to 6 degrees subnormal. While a few areas received 2 inches or more rain, the 0.30 to 0.80 inch that fell throughout most areas east of the Rockes was welcome especially in the Corn Belt, the Lake States, and in New York because it moistened drying soils.

PRECIPITATION: Although the West remained dry, thunderstorm activity was common over the Nation's midsection and the East. Only a few scattered places, mostly near the Great Lakes or the gulf plus a big area in Texas, Oklahoma, and Kansas, received 2 inches or more of rain. Monday, a cold front stretched from a Low out over the Atlantic through North Carolina along the Ohio River into the Plains. Columbia, Missouri, reported 1.80 inches of rain with 1.10 inches in 30 minutes. Dodge City, Kansas, received 0.60 inch the same hour. Later that day, heavy rains produced flash floods in Missouri and southern Illinois. At Rockford, Illinois, 1.71 inches fell in 1 hour accompanied by 54 m.p.h. winds. Thunderstorm activity spread into the Ohio Valley Monday evening. Uniontown, Kentucky, had 4.60 inches of rain. Scattered but intense thunderstorms struck Texas and Louisiana Tuesday afternoon. Severe weather also plagued Kansas and eastern Colorado later in the day. Hail one inch in diameter was reported at Denver and Eads, Colorado. Wednesday, a cold front trailed from a Low located over northern Ontario through Wisconsin to Texas. Thunderstorms along the front produced locally heavy rains. Dighton, Kansas, got nearly 5 inches while streams overflowed throughout Oklahoma and Nebraska. Rainfall was spotty and dwindled by morning. To the west, a large High brought clear, cool weather from Montana to west Texas. As this front moved eastward on Thursday, thunderstorms continued over the Nation's eastern third. Heavy rains struck Appalachia and the Deep South. Millington, Tennessee, had 2.01 inches of rain in one hour, Chattanooga, Tennessee had 1.99 inches of rain while Macomb, Mississippi, got 1.44 inches. Heavy flash floods struck western North Carolina. Friday was mostly fair except in Florida where 1.19 inches of rain fell at Jacksonville and 1.19 inches at Daytona Beach in the afternoon. Victoria, Texas, got a 1.56-inch evening rain. Thunderstorm activity remained low Saturday morning. Some banded around the lower Great Lakes, a few hit the Plains and middle Mississippi Valley, and Milton, Florida, got 1.07 inches from a predawn thunderstorm. By noon most of the Nation enjoyed fair skies and Sunday was a nice day in most places.

TEMPERATURE: Most of the Nation averaged within 3 degrees of normal last week with temperatures generally on the cool side. The area between the Mississippi and the Rockies averaged 3 degrees below normal and a few record lows were set. Also, a large 5-State area in the northern Plains averaged 6 degrees subnormal. Only the State of Maine and a few scattered areas averaged 3 degrees above normal. California attained many of the weeks extremes. Point Arena, California, reached only between 55 and 57 degrees for afternoon highs while southern desert areas usually heated up to from 100 to 110 degrees. Thermal, California, was the hottest on Thursday--112 degrees. Monday, a High over

Idaho brought cold air from the north into the Rockies. Evanston, Wyoming, recorded 45 degrees at 2 a.m. and temperatures dropped almost to freezing in the central Rockies. A high over Quebec kept the Northeast cool also. Tuesday morning temperatures ranged from the mid and upper 70's over the Nations southern half to the 40's over the Northwest. At Albany, New York, the mercury dipped to 50 degrees breaking the record low established in 1898. During the afternoon, hot and humid conditions spread from the gulf up the Ohio Valley. Buffalo, New York, hit its first 90-degree reading in over 4 years. Wednesday, chill spread from the Rockies. Afternoon temperatures from the Northwest to Nebraska stayed in the 60's. Thursday, a cold front extended from Michigan to Arkansas. Morning temperature dropped to 52 degrees at North Platte, Nebraska, equaling the 1911 record low. Friday, Texas established or tied several record lows. Abilene's 63 tied Midlands 60 and set a new one. The Rockies had 40's while cool 50's were reported from the Great Lakes to the Pacific. Damp and drizzle held temperatures in the mid-50's around Lake Superior. Saturday, a damp air mass spread over all North Central States keeping temperatures in the 50's and spreading fog. However, the rest of the Nation mostly enjoyed a warm weekend with even New England hitting 90 degrees.

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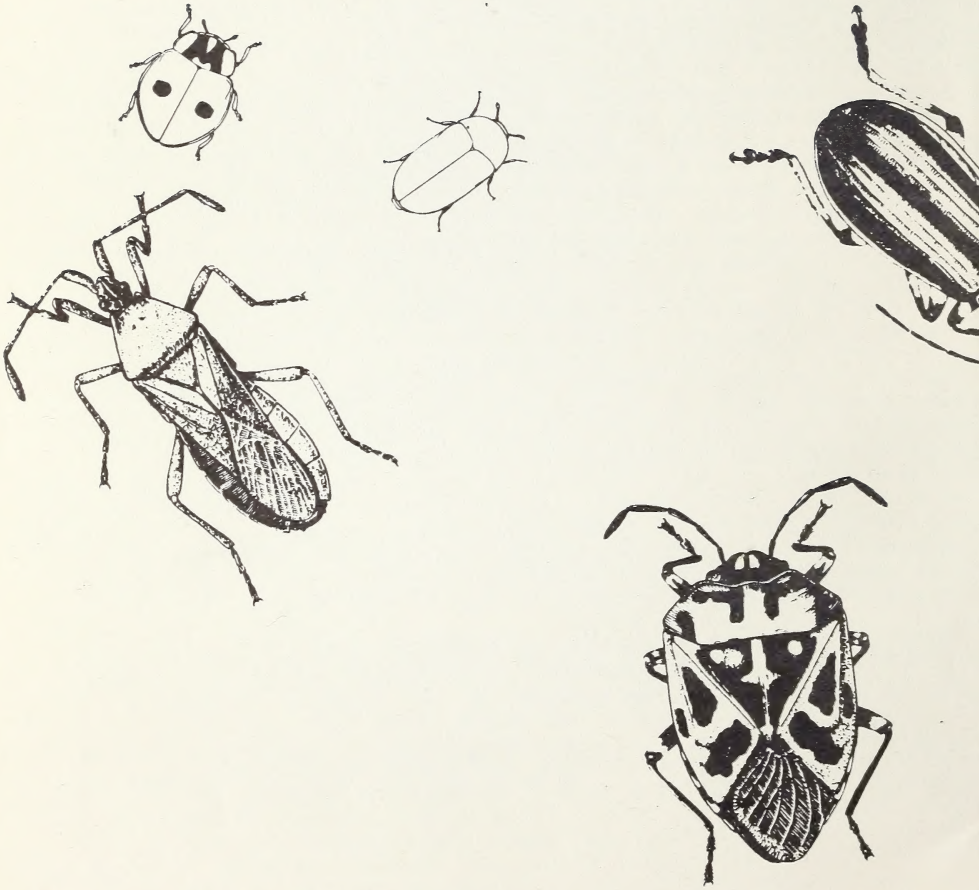
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